SAF-RC-032 100-F Remaining Sites Burial Grounds Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

mio 5/23/06

COMMENTS:

SDG K0228

SAF-RC-032

RECEIVED
JUN 2 2 2006

EDMC

Waste Site: 116-F-16

Date:

1 May 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 116-F-8 & 116-F-16

Subject: Metals - Data Package No. K0228-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0228 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

si Sarriole IIŪ sii	s Sample Dallas II		/montebile/Will	d ZDatier
J118J1	2/15/06	Soil	С	See note 1
J117N8	2/15/06	Soil	С	See note 1
J117N9	2/15/06	Soil	C	See note 1
J117P0	2/15/06	Soil	C	See note 1
J117P1	2/15/06	Soil	С	See note 1
J117P2	2/15/06	Soil	С	See note 1

^{1 -} ICP metals by 6010B (lead).

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

· Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for ICP metals.

All holding times were acceptable.

· Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J118J1) were submitted for analysis. No analytes were detected in the equipment blank.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

· Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One sets of field duplicates (J117N8/J117P2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicates were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. K0228 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0228	REVIEWER: TLI	PROJECT: 116-F-8 & 116-F-16	PAGE_1_0F_1
COMMENTS: No qualif	iers assigned		

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WAS	SHINGT	ON CLOS	UR	E HANFO	RD]					
Lab: LLI	SDG:	K0228				T		1					
Sample Num	ber	J117N8		J117N9		J117P0		J117P1		J117P2		J118J1	
Remarks										Duplicate	-	E. Blank	
Sample Date		2/15/06		2/15/06		2/15/06		2/15/06		2/15/06		2/15/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Lead	5	3.4		5.3		3.5		3.9		3.4		0.30	U

INORGANICS DATA SUMMARY REPORT 03/10/06

CLIENT: TNUHANFORD RC-032 KD228

LVL LOT #: 0602L300

WORK ORDER: 11343-606-001-9999-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
0222248	***************		*******		在江井市市市市市市市市	
-001	J118J1	Lead, Total	0.30 u	MG/KG	0.30	1.0
-002	J117N8	Lead, Total	3.4	MG/KG	0.93	3.0
-003	J117N9	Lead, Total	5.3	MG/KG	0.92	3.0
-004	J117P0	Lead, Total	3.5	MG/KG	0.96	3.0
-005	J117P1	Lead, Total	3.9	NG/KG	0.93	3.0
-006	J117P2	Lead, Total	3.4	MG/KG	0.89	3.0

N2-4/30/04

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD RC-032

LVL#: 0602L300

SDG/SAF#: K0228/RC-032

W.O.#: 11343-606-001-9999-00

Date Received: 02-17-06

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All samples except J118J1 were reported with 3-fold dilutions due to sample matrix.
- 3. All analyses were performed within the required holding times.
- 4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. The preparation/method blank (MB) was within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. The laboratory control sample (LCS) was within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recovery was within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits.

 Refer to the Inorganics Precision Report.
- 12. For the purposes of this report, the data has been reported to the Instrument Detection Limit

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

000013

- (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state 13. accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- I certify that this sample data package is in compliance with SOW requirements, both 14. technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Laboratory Manager

Lionville Laboratory Incorporated

jjw/m02-300

3/13/05 Date



Washington Closu	Washington Closure Hanford CHAIN OF CU					STODY/SAMPLE ANALYSIS REQUEST					RC-032-014 Page 1 c				ol T }
Collector Coffman/Stankovich			ny Coutact Coffman	Telepho 528-6					Project Co KESSNER		Pric	ce Code	86		naround()
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J117P1	SOIL	2-15-0		×	X									-	
J117P2	SOIL	2-15-09	<u> </u>	/	×										
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Washington Closu	re Hanford	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS						QUES?		RC-032-022 Page 1			of 1
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POSSIBLE SAMPLE HAZA	,		Preservation	None	Coal 4C	V DOOR	Non		None					
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Special Handling and/or ! Cool 4 degrees C	storage	•	No. of Container(s)	1	ı	1	1		l					
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00016	SAMPLE ANAL	YSIS		See item (1) is Special Instructions.	Chramison Hos. • 7196	See item (2) is Special Instructions	Stroeti 89,90 Sr		lactopic Phitosium					
Sample No.	Matrix *	Sample Date	Sample Time		14.1		×	\Box	· · · · · · · · · · · · · · · · · · ·		:	 		
J118J1	SOIL	2-15-0	L 745	k	X									
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Appendix 5

Data Validation Supporting Documentation

LEVEL:	Α	В	(c)	D	E	}
PROJECT:	16-F-8/	14	DATA PACKAG	E: KOZZ	8	
VALIDATOR:	+17	LAB: 2_L_I	-	DATE:	28/06	
			SDG:	K0228		
	· · · · · · · · · · · · · · · · · · ·	ANALYSES	PERFORMED			
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide			
SAMPLES/MAT	RIX					
ITRIIT	J1170	8 JII	729 J	11770		
711771	54772					
						
Technical verificat	ACKAGE COMPL	present?			50; 1	No N
Technical verificat		present?				N) N
Technical verificat Comments: 2, INSTRU	ion documentation p	IANCE AND CAL	JBRATIONS (Lev	els D and E)	Ye	
Technical verificat Comments: 2. INSTRU Initial calibrations	MENT PERFORM	IANCE AND CAL	IBRATIONS (Lev	els D and E)	Yes	No N
Technical verificat Comments: 2. INSTRU Initial calibrations	MENT PERFORM performed on all insacceptable?	IANCE AND CAL	IBRATIONS (Lev	els D and E)	Yee	NO N
Technical verificat Comments: 2. INSTRU Initial calibrations Initial calibrations ICP interference cl	MENT PERFORM	IANCE AND CAL	IBRATIONS (Lev	els D and E)	Yes Yes	NO N NO N NO N
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2. INSTRUINITIAL Comments: 2. INSTRUINITIAL Calibrations Initial calibrations ICP interference of ICV and CCV checking and C	MENT PERFORM performed on all insacceptable? cks performed on al	IANCE AND CAL struments?	JBRATIONS (Lev	els D and E)	Yes	NO N

BLANKS (Levels B, C, D, and E)		+	Time Time
ICB and CCB checks performed for all applicable analyses? (Levels D, E	E) Yes	No	(N/A
ICB and CCB results acceptable? (Levels D, E)	Yes	No	(M)
Laboratory blanks analyzed?			
Laboratory blank results acceptable?		No	N/A
Field blanks analyzed? (Levels C, D, E)			
Field blank results acceptable? (Levels C, D, E)		No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(1/A)
Comments:			
			
	<u> </u>		
4. ACCURACY (Levels C, D, and E)	\sim		
MS/MSD samples analyzed?	<u> </u>		N/A
MS/MSD results acceptable?			
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
LCS/BSS samples analyzed?	(Yes	No	N/A
LCS/BSS results acceptable?	Yes	No	N/A
Standards traceable? (Levels D, E)	Yes	No	(N/A
Standards expired? (Levels D, E)	Yes	No	(V/A
Transcription/calculation errors? (Levels D, E)	Yes	No	(V/A)
Performance audit sample(s) analyzed?	Ye {	(No) N/A
Performance audit sample results acceptable?	Yes	No	$\left(N/3\right)$
Comments:	Λο	71	4

5.	PRECISION (Levels C, D, and E)	_	
Dupli	cate RPD values acceptable?	Yes	No N/A
Dupli	cate results acceptable?		No N/A
MS/M	ISD standards NIST traceable? (Levels D, E)	Yes	No (N/A)
MS/M	ISD standards expired? (Levels D, E)	Yes	No Wa
	duplicate RPD values acceptable?		_
	split RPD values acceptable?		
Transe	cription/calculation errors? (Levels D, E)	Yes	No (NA
Comn	nents:		
6. ICP se	ICP QUALITY CONTROL (Levels D and E) erial dilution samples analyzed?	Vac	No N/A
	erial dilution %D values acceptable?		- 1
	ost digestion spike required?		1
	ost digestion spike values acceptable?		1
	ards traceable?		
	ards expired?		i i
	cription/calculation errors?		
	nents:		

7. FURNACE AA QUALITY CONTROL (Levels D and E)		
Duplicate injections performed as required?	Yes	No N/A
Duplicate injection %RSD values acceptable?	Yes	No N/A
Analytical spikes performed as required?	Yes	No N/A
Analytical spike recoveries acceptable?	Yes	No N/A
Standards traceable?	Yes	No N/A
Standards expired?	Yes	Nd N/A
MSA performed as required?	Yes	Nd N/A
MSA results acceptable?	Yes	No N/A
Transcription/calculation errors?	Yes	No N/A
Comments:		
8. HOLDING TIMES (all levels)	\wedge	
Samples properly preserved?	/Yes	No N/A
Sample holding times acceptable?	Yes	No N/A
Comments:		·

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	30
Results reported for all requested analyses? Results supported in the raw data? (Levels D, E)	(Ye) No N/A
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No 14/A
Detection limits meet RDL?	Yes No N/A
Detection limits meet RDL? Transcription/calculation errors? (Levels D, E)	Yes No (N)A
Comments:	
	·····

Appendix 6

Additional Documentation Requested by Client

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/10/06

CLIENT: TNUHANFORD RC-032 K0228

LVL LOT #: 0602L300

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	units	LIMIT	PACTOR
		*********	2300000		********	******
BLANK1	06L0117-MB1	Lead, Total	0.31 4	MG/KG	0.31	1.0

INORGANICS ACCURACY REPORT 03/10/06

CLIENT: TNUHANFORD RC-032 K0228

LVL LOT #: 0602L300

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	Sample	RESULT	TRUOMA	*RECOV	factor (SPK)
C	*********		======	*****	#3#3##	******	
- 0.02	. J117N8	Lead, Total	49.9	3.4	49.3	94.3	3.0

INORGANICS PRECISION REPORT 03/10/06

CLIENT: TNUHANFORD RC-032 K0228

LVL LOT #: 0602L300

	•		INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	factor (ref)
		***************	立を含まるなり	******	## ## #####	医新拉克斯伊尔马斯托卡
-002RBP	J117N8	Lead, Total	3.4	4.1	18.7	3.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/10/06

CLIENT: TNUHANFORD RC-032 K0228

LVL LOT #: 0602L300

			SETVED	SPIKED			
SAMPLE	SITE ID	Analyte	Sanple	TRUOMA	UNITS	FRECOV	
*****	***********	***********	=====	E=====	9 P E 2 F S	*****	
LCS1	06L0117-LC1	Lead, LCS	238	250	MG/KG	95.1	

Date:

1 May 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 116-F-8 & 116-F-16

Subject: Wet Chemistry - Data Package No. K0228-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0228 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

-Sample IĎ*-	y Sample Date⊞	" Media en e	* Validation	Date
J118J1	2/15/06	Soil	С	See note 1
J117N8	2/15/06	Soil	С	See note 1
J117N9	2/15/06	Soil	С	See note 1
J117P0	2/15/06	Soil	С	See note 1
J117P1	2/15/06	Soil	С	See note 1
J117P2	2/15/06	Soil	С	See note 1

^{1 -} Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

· Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the

limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

One field blank (J118J1) was submitted for analysis. No analytes were detected in the field blank.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J117N8/J117P2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

· Completeness

Data package K0228 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

[17] 、图图 在外部整体中的形成形式,可以编译。1

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0228	REVIEWER: TLI	PROJECT: 116-F-8 & 116-F-16	PAGE_1_OF_1		
COMMENTS: No qualifiers assigned					

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTO	ON CLOSUR	RE HANFO	ORD			I							
Lab: LLI	SDG:	K0228											
Sample Number		J117N8		J117N9		J117P0		J117P1		J117P2		J118J1	
Remarks		·						}		Duplicate		E. Blank	
Sample Date		2/15/06		2/15/06		2/15/06		2/15/06		2/15/06		2/15/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	0.20	U	0.29		0.42		0.28		0.34		0.20	U

INORGANICS DATA SUMMARY REPORT 03/06/06

CLIENT: TNU-HANFORD RC-032 K0228 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0602L300

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
****					***	*****
-001	J118J1	* Solids	100	¥	0.01	1.0
		Chromium VI	0.20 น	MG/KG	0.20	1.0
-002	J117N8	* Solids	95.7	ŧ	0.01	1.0
		Chromium VI	0.29	MG/KG	0.21	1.0
-003	J117N9	* Solids	95.9	*	0.01	1.0
		Chromium VI	0.42	MG/KG	0.21	1.0
-004	J117P0	* Solids	91.4	k	0.01	1.0
		Chromium VI	0,28	MG/KG	0.22	1.0
-005	J117P1	* Solids	94.7	ŧ	0.01	1.0
		Chromium VI	0.34	MG/KG	0.21	1.0
-006	J117P2	* Solids	98.1	•	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0

1/30/01

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD RC-032 K0228

LVL#: 0602L300

W.O.#: 11343-606-001-9999-00

Date Received: 02-17-06

INORGANIC NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

- 3. Sample holding times as required by the method and/or contract were met.
- 4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. The method blank for Chromium VI was within the method criteria.
- 6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
- 7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
- 8. The replicate analysis for Chromium VI was within the 20% Relative Percent Difference (RPD) control limit.
- Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain **∦**aniels ∕

Laboratory Manager

Lionville Laboratory Incorporated

njp\i02-300

3/24/01 Date

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

Washington Closu	re Hanford	CI	HAIN OF CUST	ODY/S	AMPL	E ANAL'	YSIS	RE	QUEST	`		RC-0	32-014	Page 1	of <u>I</u>
Cullector Coffman/Stankovich			any Contact Coffman	Telepho 528-6					ect Coordis SNER, JH	utor	Price Co	ode	86	Data Tu	глагои
Project Designation 100-F Remaining Sites Buris	al Grounds - Soil Full Pro	Sample stocol 116	ing Location -F-16 Deep- Shallo	en m	a 2-8	-06		SAF RC-0			Air Qu	ality		216	lays
Ice Chest No. ERC	-03-103	Field l	Logbook No. -1174		COA R16F162	000	-		od of Ship dex	ment					
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POSSIBLE SAMPLE HAZA				T	Ī	/	<u> </u>							1	
NA < POT	,		Preservation	None	Cool 4C	, nc	Non		None						
Special Handling and/or S	Storage		Type of Container	G/P	G/P	G/P	G/I		G/P						
ol 4 degrees C		i	No. of Container(s)		1	1	/	- 1	1						
			Volume	250g	60mL	500mL	286	Ÿ	60mL						
SAMPLE ANALYSIS				See item (1) in Special Instructions	Chromium Hex - 7196	See item (2) in Special Instructions.	Strand 19,90- Sr pag 2,64	(a)	Isotopic Plutonium						
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J117N9	SOIL			X.	X										
J117P0	SOIL	2-15-0		×	K			\dashv			-	 +	····		
J117P1	SOIL	2-15-0		× .	×		 	_		<u>.</u>					
J117P2	SOIL	2-15-0	 	<u>~</u>	×		<u> </u>	-			_			 	
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100-F Remaining Sites Burial Grounds - Soil Full Protocol 116-F-16 Shallow	<u>.</u>				SAF No. RC-032	A	ir Quality		2(,	lays
ice Chest No. ERC - 03 - 103 Field Logbook No. EFL-1174		COA R16F1620	000		Method of Ships Fed Ex	nent '				. ·
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POSSIBLE SAMPLE HAZAROS/REMARKS										
NA < POT Limits Preservation	Nace	Cool 4C	None	None			<u> </u>	ļ		
Special Handling and/or Storage Type of Container	G/P	G/P	G/P	G/F	G/P			-		
Cool 4 degrees C No. of Container(s)				\sum_{k}			J			ļ
Volume	250g	60mL	500mL	5. 2.	60mL					
1 C .	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	McLa Stronti 89,90 Sr	Pantonium					
USample No. Matrix * Sample Date Sample Time	7, 7		 	ď	-	-				 -
J118J1 SOIL 2-15-04 745	k	X		-			+			
										_
CHAIN OF POSSESSION Sign/Print Names Relinquished By/Removed From Date/Time (430 Received By/Stored In Date		SPEC	CIAL INSTR	ÚCTIO	ons -		241	a 2/15/06		Matrix *
	/Time 1450	(1) B	CP Metals - 601	0 (Client	List) (Aluminum, A	ntimony, A	rsenio, Barnun-	Berlium, Boro	u.	S*Soil Sk-Sahmept
Refinquished By/Removed From Date/Time Received By/Stored in Date 1728 2C 2-16-06 Date/Time C Styther 17 Style Refinquished By/Removed From Date/Time 100 Received By/Stored in Date/Time Date/Time	Time //30 2-/6-06 Time	(2) (155);	el, Potassium, Se Tamma Spectros ; Gamma Spec -	denium, copy (TC Add-on	n, Cohait, Coppet, Is Silicon, Silver, Sodie Il List) (Cesium-13 (Silver-108 metastat	m, Vanadiu 7. Cobelt-60	u. Zinc). Merc	ш ү • 9490 - (G	₩	SO=Solid SI=Studge W+ Water O-Oil A=Ant DE=Drum Solids Dit=Drum Liquids
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LABORATORY Received By SECTION	Title							D	atc/Time	
FINAL SAMPLE Disposal Method DISPOSITION			Dispor	ed Hy				<u> </u>	Date/Time	

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	(0)	D	E
PROJECT: /00	F 116-	F-8416	DATA PACKAG	E: 4/2/02	750228
VALIDATOR:	TLT	LAB: LCZ	\triangleright	DATE: 4/28	f-QC
÷			SDG:	COTAN KO.	258
		ANALYSES	PERFORMED	11/62	
Anions/IC	тос	тох	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pН	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MAT	RIX				
JITUR	J11729	J117P0	JUZPI	JIITPZ J	11851
					5011
	ion documentation		CASE NARRATIV		Yes (No)N/A
Initial calibrations Initial calibrations	performed on all in acceptable?	struments?			Yes No N/A
					Yes No N/A
	-				Yes No N/A
					Yes No N/A
Calculation check	acceptable?			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Yes No N/A
Comments:					

The contract of the contract

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	s No N/A
ICB and CCB results acceptable? (Levels D, E)	s No (N/A
Laboratory blanks analyzed? (Ye	s) No N/A
Laboratory blank results acceptable?	No N/A
Field blanks analyzed? (Levels C, D, E)	s No N/A
Field blank results acceptable? (Levels C, D, E)	No N/A
Transcription/calculation errors? (Levels D, E)	s No N/
Comments:	
4. ACCURACY (Levels C, D, and E))
Spike samples analyzed?	No N/A
Spike recoveries acceptable?	
Sike standards NIST traceable? (Levels D, E)	1 1
Spike standards expired? (Levels D, E)	\sim
LCS/BSS samples analyzed?	(1)
LCS/BSS results acceptable?	es No N/A
Standards traceable? (Levels D, E)	es No N/
Standards expired? (Levels D, E)	es No N
Transcription/calculation errors? (Levels D, E)	es No N/
Performance audit sample(s) analyzed?	es No N/A
Performance audit sample results acceptable?	es No (N/)
Comments: NO Pa	1 5

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

Yes No N/A
Yes No (N/A
Yes No (N/A
Yes No N/A
Yes No (N/A)
Yes No N/A
Yes No N/A

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GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	
Results reported for all requested analyses?	Yes No N/A
Results supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	Yes No (N/A)
Detection limits meet RDL?	
Transcription/calculation errors? (Levels D, E)	
Comments:	
	.

Additional Documentation Requested by Client

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/06/06

CLIENT: TNU-HANFORD RC-032 K0228

LVL LOT #: 0602L300

WORK ORDER: 11343-606-001-9999-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
283 7888				****	克米克里斯巴克里	
BLANK10	06LVI012-MB1	Chromium VI	0.20 ц	MG/KG	0.20	1.0

INORGANICS ACCURACY REPORT 03/06/06

CLIENT: TNU-HANFORD RC-032 K0228 WORK ORDER: 11343-606-001-9999-00 LVL-LOT #: 0602L300

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	*RECOV	FACTOR (SPK)
	祖院总理法法院的国际国际政治的政策不平成不平	XX 李 平 = = 15 = 16 = 16 = 16 = 16 = 16 = 16 =	**=*=				中国有效共产业 七 生生
-001	J118J1	Soluble Chromium VI	4.0	0.20u	4.0	96.4	1.0
		Insoluble Chromium VI	1080	0.20u	979	110.0	100
BLANK10	06LVI012-MB1	Soluble Chromium VI	4.0	0.20u	4.0	100.2	1.0
		Insoluble Chromium VI	1110	0.20u	1080	102.5	100

INORGANICS DUPLICATE SPIKE REPORT 03/06/06

CLIENT: TNU-HANFORD RC-032 K0226

LVL LOT #: 0602L300

WORK ORDER: 11343-606-001-9999-00

			SPIKE#	l SPIKE#	2
SAMPLE	SITE ID	ANALYTE	*RECOV	*RECOV	*DIFF
	建筑水水区在在港北西北京市中共和国市			9E466z	
-001	J118J1	Chromium VI	96.4	110.0	13.2
BLANK10	06LVI012-MB1	Chromium VI	100.2	102.5	2.3

INORGANICS PRECISION REPORT 03/06/06

CLIENT: TNU-HANFORD RC-032 K0228

LVL LOT #: 0602L300

WORK ORDER: 11343-606-001-9999-00

			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FACTOR (REP)
		410101000000000000000000000000000000000		******	*****	
-OCIREP	J118J1	Chromium VI	0.20u	0.24	51.2	1.0

Date:

1 May 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 116-F-8 & 116-F-16

Subject: Radiochemistry - Data Package No. K0228-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0228 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	- Sample:Date:	n i A liferi a en l	.∷,Valldation	Datie
J118J1	2/15/06	Soil	С	See note 1 & 2
J117N8	2/15/06	Soil	C	See note 1
J117N9	2/15/06	Soil	С	See note 1
J117P0	2/15/06	Soil	С	See note 1
J117P1	2/15/06	Soil	С	See note 1
J117P2	2/15/06	Soil	С	See note 1

^{1 -} Gamma spectroscopy, total strontium and alpha spectroscopy (isotopic plutonium).

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
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- Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

· Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

。1911年 - 1917年第二屆 基本政策的基本企業 医动物 医动物 医电影 (1911年)

^{2 -} Nickel-63.

· Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J118J1) was submitted for analysis. Potassium-40 was detected in the equipment blank. Under the WCH statement of work, no qualification is required.

Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

Laboratory Duplicates

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J117N8/J117P2) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPD for potassium-40(43%) was outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

Detection Levels

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Thirty analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

· Completeness

Data package No. KO228 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Thirty analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0228	REVIEWER: TLI	PROJECT: 116-F-8 & 116-F-16	PAGE_1_OF_1
COMMENTS: No qualif			

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTO	oject: WASHINGTON CLOSURE HAI					}							
Laboratory: EB	•												
Case	SDG:	K0228		ĺ									
Sample Number		J117N8		J117N9		J117P0		J117P1		J117P2		J118J1	
Remarks								-		Duplicate		E. Blank	
Sample Date		2/15/06		2/15/06	•	2/15/06	-	2/15/06		2/15/06		2/15/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Nickel-63	30	NA		NA		NA		NA		NA		0.035	
Total Strontium	1	-0.032		-0.012		-0.028		-0.016		0.058		-0.014	
Plutonium-238	1	0		-0.065		-0.065		0		0		-0.027	
Plutonium-239/240	1	0		0.065		0		0		0		0.027	
Potassium-40		11.2		9.86		8.41		8.86		17.4		3.65	
Cobait 60	0.05	U	U*	Ū	U*	U	U*	U	U*	U	U*	U	U*
Cesium 137	0.05	Ü	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Radium-226		U	Ü	U	U	0.343		U	U	U	Ü	U	Ü
Radium-228		Ü	Ų	U	U	U	U	υ	U	U	כ	U	U
Europium 152	0.1	U	Ů*		ځ	U	U*	U	U*	U	U*	Ū	U*
Europium 154	0.1	U	U*		בָּ	U	U*	U	U*	U	IJ*	U	U*
Europium 155	0.1	U	U*		U*	U	U*	U	U*	บ	U*	U	U*
Thorium-228		0.387		0.629		0.472		0.552		0.448			U
Thorium-232		U	U	U	U	U	U	U	U	U	U		U
Uranium-235(gea)		U	υ	U	U	U	U	U	U	U	U		C
Uranium-238(gea)		U	U	U	U	U	U	υ	U	U	Ü		U
Americium-241(gea)		U	U	U	U	U	Ü	U	U	U	٦		
Silver-108m		Ū	U	U	U	U	U	U	U	U	5	U	U

^{* -} RQL exceeded

R602124-01

DATA SHEET

J117N8

	SDG	7390	Client/Case no	Hanford SDG_K0228	
	Contact	Melissa C. Mannion	Contract	No. 630	_]
					- 1
	Lab sample id	R602124-01	Client sample id	J117N8	
	Dept sample id	7390-001	Location/Matrix	116-F-16 Shallow SOLID	
	Received	02/17/06	Collected/Weight	02/15/06 08:15 746 q	
	% solids	96.8	Custody/SAF No	RC-032-014 RC-032	
1					

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.032	0.14	0.30	1.0	υ	SR
Plutonium 238	13981-16-3	0	0.092	0.35	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.092	0.35	1.0	υ	PÜ
Potassium 40	13966-00-2	11.2	7.7	0.72			GAM
Cobalt 60	10198-40-0	์ ซ		0.10_	0.050	U	GAM
Cesium 137	10045-97-3	υ		0.090	0.10	U	GAM
Radium 226	13982-63-3	U		0.21	0.10	U	GAM
Radium 228	15262-20-1	Ŭ		0.75	0.20	ט	GAM
Europium 152	14683-23-9	ָ ט		0.19	0.10	Ü	GAM
Europium 154	15585-10-1	ָּט [ַ]		0.28	0.10	Ū	GAM
Europium 155	14391-16-3	U		0.18	0.10	Ū	GAM
Thorium 228	14274-82-9	0.387	0.17	0.097			GAM
Thorium 232	TH-232	ซ		0.75		ប	GAM
Uranium 235	15117-96-1	ซ		0.28		ប	GAM
Uranium 238	U-238	U		11		ប	GAM
Americium 241	14596-10-2	U		0.27		Ü	GAM
Silver 108m	14391-65-2	υ .		0.057		υ	GAM

100F RemainSitesBurialGrnd-SoilFullP

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DATA SHEET

J117N9

	7390 Melissa C. Mannion	Client/Case no Contract		K0228
Lab sample id Dept sample id Received % solids	7390-002 02/17/06	Client sample id Location/Matrix Collected/Weight Custody/SAF No	116-F-16 Shallow 02/15/06 08:30 798 q	SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.012	0.14	0.29	1.0	U	SR
Plutonium 238	13981-16-3	-0.065	0.13	0.50	1.0	บ	PÜ
Plutonium 239/240	PU-239/240	0.065	0.13	0.50	1.0	υ	PU
Potassium 40	13966-00-2	9.86	1.3	0.97			GAM
Cobalt 60	10198-40-0	U		0.11	0.050	U	GAM
Cesium 137	10045-97-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	Ū		0.22	0.10	U	GAM
Radium 228	15262-20-1	ប		0.46	0.20	ប	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	ប		0.39	0.10	U	GAM
Europium 155	14391-16-3	U		0,26	0.10	U	GAM
Thorium 228	14274-82-9	0.629	0.17	0.16			GAM
Thorium 232	TH-232	U		0.46		บ	GAM
Uranium 235	15117-96-1	U		0.39		Ū	GAM
Uranium 238	U-238	Ū	•	14		Ū	GAM
Americium 241	14596-10-2	Ü		0.23		บ	GAM
Silver 108m	14391-65-2	Ū		0.079		Ü	GAM

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R602124-03

DATA SHEET

J117P0

	7390 Melissa C. Mannion	Client/Case no Contract		SDG_K0228
L.		Client sample id Location/Matrix Collected/Weight Custody/SAF No	116-F-16 Shallow 02/15/06 08:40 85	SOLID 51 q 032

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.028	0.14	0.29	1.0	ט	SR
Plutonium 238	13981-16-3	-0.065	0.13	0.50	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.13	0.50	1.0	U	PU
Potassium 40	13966-00-2	8.41	1.6	1.3			GAM
Cobalt 60	10198-40-0	U		0.13	0.050	ט	GAM
Cesium 137	10045-97-3	U		0.11	0.10	บ	GAM
Radium 226	13982-63-3	0.343	0.18	0.18	0.10		GAM
Radium 228	15262-20-1	U		0.52	0.20	υ	GAM
Europium 152	14683-23-9	U		0.32	0.10	ប	GAM
Europium 154	15585-10-1	Ū		0.40	0.10	υ	GAM
Europium 155	14391-16-3	U		0.25	0.10	U	GAM
Thorium 228	14274-82-9	0.472	0.14	0.15			GAM
Thorium 232	TH-232	ប		0.52		ប	GAM
Uranium 235	15117-96-1	Ū		0.39		บ	GAM
Uranium 238	U-238	Ü		13		ט	GAM
Americium 241	14596-10-2	υ	-	0.23		U	GAM
Silver 108m	14391-65-2	υ		0.083		Ü	GAM

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DATA SHEET

J117P1

1	7390 Melissa C. Mannion	Client/Case no Contract	
Lab sample id Dept sample id Received % solids	7390-004 02/17/06	Client sample id Location/Matrix Collected/Weight Custody/SAF No	116-F-16 Shallow SOLID 02/15/06 08:50 746 q

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.016	0.16	0.32	1.0	U	SR
Plutonium 238	13981-16-3	0	0.13	0.48	1.0	ט	PU
Plutonium 239/240	PU-239/240	0	0.13	0.48	1.0	ט	PU
Potassium 40	13966-00-2	8.86	1.7	1.3			GAM
Cobalt 60	10198-40-0	υ		0.14	0.050	U	GAM
Cesium 137	10045-97-3	υ		0.13	0.10	Ü	GAM
Radium 226	13982-63-3	σ		0.50	0.10	บ	GAM
Radium 228	15262-20-1	υ		0.64	0.20	ט	GAM
Europium 152	14683-23-9	ט		0,39	0.10	Ū	GAM
Europium 154	15585-10-1	ប		0.44	0.10	U	GAM
Europium 155	14391-16-3	ט		0.28	0.10	U	GAM
Thorium 228	14274-82-9	0.552	0.17	0.17			GAM
Thorium 232	TH-232	U		0.64		ប	GAM
Uranium 235	15117-96-1	ប		0.43		U	GAM
Uranium 238	U-238	U		17		U	GAM
Americium 241	14596-10-2	υ		0.27		Ū	GAM
Silver 108m	14391-65-2	U		0.092		ט	GAM

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DATA SHEET

J117P2

	7390 Melissa C. Mannion	Client/Case no Contract		SDG_K0228
		Client sample id Location/Matrix Collected/Weight Custody/SAF No	116-F-16 Shallow 02/15/06 08:15 75	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	0.058	0.18	0.36	1.0	ט	SR
Plutonium 238	13981-16-3	0	0.043	0.16	1.0	Ū	PU
Plutonium 239/240	PU-239/240	0	0.043	0.16	1.0	ΰ	ΡÜ
Potassium 40	13966-00-2	17.4	3.1	0.84			GAM
Cobalt 60	10198-40-0	ប		0.099	0.050	Ŭ	GAM
Cesium 137	10045-97-3	Ū		0.091	0.10	U	GAM
Radium 226	13982-63-3	U		0.48	0.10	U	GAM
Radium 228	15262-20-1	Ū		1.0	0.20	U	GAM
Europium 152	14683-23-9	บ		0.23	0.10	U	GAM
Europium 154	15585-10-1	σ	•	0.30	0.10	บ	GAM.
Europium 155	14391-16-3	U		0.26	0.10	บ	GAM
Thorium 228	14274-82-9	0.448	0.13	0.15	•		GAM
Thorium 232	TH-232	Ü		1.0		ប	GAM
Uranium 235	15117-96-1	U .		0.33		ซ	GAM
Uranium 238	U-238	ט		11		U	GAM
Americium 241	14596~10-2	U		0.32		U	GAM
Silver 108m	14391-65-2	U		0.063		U .	GAM

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DATA SHEET

J118J1

				- 1
SDG	7390	Client/Case no	Hanford SDG_K0228	
Contact	Melissa C. Mannion	Contract	No. 630	
	_			
Lab sample id	<u>R602124-06</u>	Client sample id	J118J1	_
Dept sample id	7390-006	Location/Matrix	116-F-16 Shallow SOLID	_
Received	02/17/06	Collected/Weight	02/15/06 07:45 908 q	
% solids	100.0	Custody/SAF No	RC-032-022 RC-032	
			the state of the s	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Nickel 63	13981-37-8	0.035	1.8	3.1	30	ָ	NI L
Total Strontium	SR-RAD	-0.014	0.16	0.32	1.0	ប	SR
Plutonium 238	13981-16-3	-0.027	0.055	0.21	1.0	ប	PU
Plutonium 239/240	PU-239/240	0.027	0.055	0.21	1.0	ប	PU
Potassium 40	13966-00-2	3.65	1.1	0.60			GAM
Cobalt 60	10198-40-0	υ		0.084	0.050	U	GAM
Cesium 137	10045-97-3	ប		0.075	0.10	ซ	GAM
Radium 226	13982-63-3	ับ		0.37	0.10	ប	GAM
Radium 228	15262-20-1	U		0.40	0.20.	υ	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	ט	GAM
Europium 155	14391-16-3	ŭ		0.18	0.10	U	GAM
Thorium 228	14274-82-9	ט		0.35		U	GAM
Thorium 232	TH-232	บ	•	0.40		U	GAM
Uranium 235	15117-96-1	U		0.29		Ü	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.19		U	GAM
Silver 108m	14391-65-2	บ	•	0.053		U	GAM

100F RemainSitesBurialGrnd-SoilFullP

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Laboratory Narrative and Chain-of-Custody Documentation

Case Narrative

Page 1 of 1

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0228 was composed of six solid (soil) samples designated under SAF No. RC-032 with a Project Designation of: 100-F Remaining Sites Burial Grounds – Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results ere transmitted to WCH via e-mail on March 14, 2006.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.1 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

relesso Marmen

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion

Senior Program Manager

Date

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Washington Closure Hanford		CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							RC-032-014 Page 1 of 1				
Collector Coffman/Stankovich			Company Contact Telephone No. KO228 R.T. Coffman 528-6409 KO228				Project Coordinator KESSNER, JH		Price C	ode	87	Data Tur	naround	
Project Designation 100-F Remaining Sites Burial	Grounds - Soil Full Pro	Sampl tocol 116					SAF No. RC-032		Air Qu	uality		2180	24D	
lce Chest No. AFS	04-122	Field I EFL	Field Logbook No. COA EFL-1174 R16F162000					Method of Shipment FedEx						
Shipped To (EBERLINE SERVICES / LIC		I	Offsite Property No. A 060304					Bill of Lading/Air Bill No. See OSPC						
POSSIBLE SAMPLE HAZA	RDS/REMARKS			<u> </u>]									1
NA L DOT Limits			Preservation	None	Cool 4C	None	None		onc .				<u> </u>	
Special Handling and/or S	torage		Type of Container	dep.	G/P		G/P						<u> </u>	
None 2-16-06	,		No. of Container(s)	'\	ا را	'	'		'	1				
None 2.00			Volume	250g -	5 60mL	500mL	60m	L 60	mL		-			
				See item (1) in Special	fromium 12x - 7196	See item (2) in Special	Minkel		opic					
1 2	SAMPLE ANAL	vere		Instructions.	I I I	Instructions.	Strontiur 89,90 To Sr	Total						
	SAMIFLE ANAL	1313		ļ										
00000 019 Samula No				1	\	N .	2/8/	08	}			ł	1	
6	15	0	Sample Time										in de production (
Sample No. J117N8	Matrix *	Sample Date			ár na hair	×	k	<u>- 127 12 - 1</u>						butti ayaa
	SOIL	2-15-0		 	 								 	
J117N9	SOIL	2-15-6		 	 -	Υ.	<u> </u>					 	 	
J117P0	SOIL	2-15-0		 	 -	<u>\w</u>	<u>×</u>					[
J117P1	SOIL	2-15-		ļ	 	<u> </u>	<u>~</u>					ļ. <u>. </u>	 	<u> </u>
J117P2	SOIL	2-15-6	0815		<u>l</u>	<u> </u>	<u> </u>	<u> </u>				<u> </u>	<u> </u>	
CHAIN OF POSSESSIO		Siga/Prin		ate/Time	SPE	CIAL INSTR	RUCTIO	ONS		na stel	n(-			Matrix *
inquished By/Removed From	Date/Time /4.3C	Received By/Stor	red in D	<u>,] o</u>	(1) ICP Metals - 6010 (Client List) (Aluminum, Astimony, Assoric, Barlum, Beryllium, Boton, Cadmium, Calcium, Chromium, Cobelt, Copper, Iron, Lead, Magnacium, Masganese, Motybdensum, SO-Solid						S=Soil SE=Sediment			
MILL MSTANK	Date/Time	Passived Bu/Sto	2/1-/0- D	ate/Time /	Cad A 7 A Nic	lmium Calcium kal. Petassium S								SO=Solid SI=Sludge
17730 / 21 2 - 1/ A/ 1/20 (2) Gamma Spectroscopy (T							всору (Т	CL List) (Ca	sium-137, Cob	alt-60, Europ	ium-152	, Europium-15	4,	W = Water O=Oil
Relinquished By/Removed From RZ Stettler 1.7 Steller	Date/Time /60	Received By/Sto	ived By/Stored In Date/Time								A-Air DS=Drum Solids DL=Drum Liquids			
Relinquished By/Removed From	Date/Time		Date/Time				Personnel not available to Relinquish samples from 3728 Ref # 2C on 2 1/6 106					Y=Tissue W(=Wipe L=Liquid V=Vegetation		
Relinquished By/Removed From	Date/Time	Received By/Sto		ate/Time		Ref# Z(on		0100						X=Other
Relinquished By/Removed From Date/Time Recei			red In D	ate/Time										<u> </u>
LABORATORY Received By SECTION	y			Ti	tle							<u></u> .	Date/Time	·
FINAL SAMPLE Disposal Me DISPOSITION	ethod	······································				Dispo	osed By						Date/Time	

Washington Clos	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST RC-032-022 Page 1 of								of <u>1</u>			
Collector Coffman/Stankovich		Compa	nny Contact Coffman	Telepho 528-6	ne No.			Project Coordin KESSNER, JH		Price Code	8C	Data Tur	naround
Project Designation 100-F Remaining Sites Bu	ırial Grounds - Soil Full Pro		ing Location -F-16 Shallow	10228	(739	0)		SAF No. RC-032		Air Quality		2(8	lays
Ice Chest No.	Field 1 EFL	Logbook No. -1174		COA R16F1620	00		Method of Ship Fed Ex	ment					
Shipped To EBERLINE SERVICES	LIONVILLE	Offsite	e Property No.	060	304			Bill of Lading/	Air Bill I	No. Se	e 05f	°C	
POSSIBLE SAMPLE HA	ZARDS/REMARKS			Z .									
NA < POT	Limits		Preservation	None	Coal 4C	None	Non						
Special Handling and/o	or Storage		Type of Container	S/P	G/P	G/P	G/I	P G/P				<u> </u>	
None	1.5 4-06		No. of Container(s)	اجي ا	\$>		<u> </u>					<u> </u>	<u> </u>
NOKE			Volume	250g	60mL	500mL	60m	ıL 60m.L					
O O O Sample No.	SAMPLE ANAL	YSIS		See item (1) in Special Instructions.	First - 7196	See item (2) in Special Instructions.	Nickel Stront 89,90 Sr	um-Plutonium Total					
Sample No.	Matrix *	Sample Date	Sample Time	SE estatua ja								nervic.	
J118J1	SOIL	2-15-0	L 745			k		r k					
				 		 						ļ	
	•			1			-						
				 			-						
CHAIN OF POSSES	SION	Sign/Prin	t Names		SPE	CIAL INSTI	RUCTIO	ONS	<u> </u>		<u>l</u>	<u> </u>	Matrix *
Relinquished By/Removed From MS+A Relinquished By/Removed From	Date/Time Date/Time Date/Time Date/Time Date/Time	Received By/Sto 3 728/2 Received By/Sto Received By/Sto	red In D. C. 2/15/06 red In D. C. 1/15/06 red In D. C. 1/15/06 X red In D. C. 1/15/06 I the control of the	Date/Time 2 · /6 · c Date/Time Date/Time Date/Time Date/Time Date/Time	(1) I Cadro Nick (2) (155)	CP Metals - 60 nium, Calcium, el, Potassium, S Gamma Spectro	Chromiu Chromiu Selenium, scopy (T - Add-on availab	at List) {Aluminum, Am, Cobalt, Copper, I, Sülcon, Silver, Sodi CL List) {Cesium-1: (Silver-108 metasta	ron, Lead, um, Vana 17, Cobalt	, Magnesium, Man dium, Zine}; Merc	ganese, Molyb ury - 7470 - (C , Europium-15	denum, CV)	S-Soil SE-Sodiment SO-Solid SI-Stedge W = Water O-Oil A#Air DS-Drum Solids DI-Drum Liquids T-Tissue WI-Wipe L-Liquid V-Vegetation X=Other
	al Method					Dispo	osed By				. <u> </u>	Date/Time	
DISPOSITION	·												

Appendix 5

Data Validation Supporting Documentation

APPENDIX A RADIOCHEMICAL DATA VALIDATION CHECKLIST

		т		T	T
VALIDATION LEVEL:	A	В	() `	D	E
PROJECT: // C	-E-8/11	<u> </u>	DATA PACKAG	GE: /202	52
VALIDATOR:	TCT	LAB:			28/06
			SDG:	K0228	
		ANALYSES T Technetium-99	PERPORMED Alpha Spectroscopy	Gamma Spectroscopy	
Gross Alpha/Beta Total Uranium	Strontium-90 Radium-22	Tritium	Michael-13		
SAMPLES/MAT	RIX	<u> </u>			
JIITUS	J117N9	J117 PO	JIJPI	J117PZ J	117807
					
	<u> </u>				
		· · · · · · · · · · · · · · · · · · ·			<u>cn/</u>
1 Completence	70		•		□ N/A
1. Completenes	SD				7
Technical verifi	cation forms pro	esent?	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Ye	a No N/A
Comments:					
					· · ·
	. <u> </u>				
					
	adia o di assala D	, E)			Mary A
2. Initial Calibi	ration (Levels D	', E)			
Instruments/det	tectors calibrated	17			Yes No N/A

Standards NIS7	f traceable?	***************************************		***************************************	Yes No N/A
Standards Expi	red?				Yes No N/A
Comments:					

3. Continuing Calibration (Levels D, E)	N/A
Calibration checked within required frequency?	Yes No N/A
Calibration check acceptable?	
Calibration check standards traceable?	Yes No N/A
Calibration check standards expired?	Yes No N/A
Calculation check acceptable?	Yes No N/A
Comments:	
	•
	$\mathcal{L}_{\mathcal{L}}$
4. Background Counts (Levels D, E)	
Background Counts checked within required frequency?	Yes No N/A
Background Counts acceptable?	Yes No N/A
Calculation check acceptable?	Yes No N/A
Comments:	

And the Artifact particle flow to the constraint of the constraint

5. Blanks (Levels B, C, D, E)	🗆 N/A
Method blank analyzed within required frequency?	Yes No N/A
Method blank results acceptable?	7.1
Analytes detected in method blank?	
Field blank(s) analyzed?	
Field blank results acceptable?	
Analytes detected in field blank(s)?	
Transcription/Calculation Errors? (Levels D, E)	
Comments:	
K-40 in FB	
6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E)	🗆 N/A
LCS /BSS analyzed within required frequency?	Yes No N/A
LCS/BSS recoveries acceptable?	Yes No N/A
LCS/BSS traceable? (Levels D,E)	
LCS/BSS expired? (Levels D,E)	Yes No (V/A)
LCS/BSS levels correct? (Levels D,E)	Yes No (N/A)
Transcription/Calculation Errors? (Levels D, E)	>\
Comments:	
	\ \rightarrow \ \ \tag{\text{Sym}}
7. Chemical Carrier Recovery (Levels C, D, E)	VL N/A
Chemical carrier added?	1
Chemical recovery acceptable?	Yes No N/A
Chemical carrier traceable? (Levels D, E)	

Chemical carrier expired? (Levels D, E)	Yes No N/A
Transcription/Calculation errors? (Levels D, E)	Yes No N/A
Comments:	······································
8. Tracer Recovery (Levels C, D, E)	🗆 N/A
Tracer added?	Yes No N/A
Tracer added? Tracer recovery acceptable?	Yes No N/A
Tracer traceable? (Levels D, E)	
Tracer expired? (Levels D, E)	
Transcription/Calculation errors? (Levels D, E)	
Comments:	
9. Matrix Spikes (Levels C, D, E)	\mathcal{O}_{\cdots}
9. Matrix Spikes (Levels C, D, E)	ja N/A
Matrix spike analyzed?	Yes No N/A
Spike recoveries acceptable?	Yes No N/A
Spike source traceable? (Levels D, E)	Yes No N/A
Spike source expired? Levels D, E)	Yes No N/A
Transcription/Calculation Errors? (Levels D, E)	Yes No N/A
Comments:	

10. Duplicates (Levels C, D, E)	🗖 N/A
Duplicates Analyzed at required frequency?	Yes No N/A
RPD Values Acceptable?	> <
Transcription/Calculation Errors? (Levels D, E)	
Comments:	
11. Field QC Samples (Levels C, D E)	□ N/A
Field duplicate sample(s) analyzed?	
Field duplicate RPD values acceptable?	Yes (No N/A
Field split sample(s) analyzed?	
Field split RPD values acceptable?	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	
Comments:	proPetson Fr
1240 - 437, RPD	
12. Holding Times (All levels)	
Are sample holding times acceptable?	Yes No N/A
Comments:	
	<u> </u>

13. Results and Detection Limits (All Levels)	🗆 N/A
Results reported for all required sample analyses?Ye	No N/A
Results supported in raw data?(Levels D, E)Ye	
Results Acceptable? (Levels D, E)	s No(N/A
Transcription/Calculation errors? (Levels D, E)Ye	s No NA
MDA's meet required detection limits?	es (No) N/A
Transcription/calculation errors? (Levels D, E)	
Comments: 30 and	

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP K0228

R602124-08

METHOD BLANK

Method Blank

	7390 Melissa C. Mannion	Client/Case no Contract	SDG_K0228
Lab sample id Dept sample id		Client sample id Material/Matrix SAF No	SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Nickel 63	13981-37-8	-0.532	1.8	3.1	30	υ	NI L
Total Strontium	SR-RAD	-0.042	0.15	0.30	1.0	U	SR
Plutonium 238	13981-16-3	0.115	0.23	0.44	1.0	U	ΡÜ
Plutonium 239/240	PU-239/240	0	0.11	0.44	1.0	ប	PU
Potassium 40	13966-00-2	ซ	·	1.3		U	GAM
Cobalt 60	10198-40-0	U		0.062	0.050	U	GAM
Cesium 137	10045-97-3	U		0.067	0.10	ับ	GAM
Radium 226	13982-63-3	U		0.11	0.10	บ	GAM
Radium 228	15262-20-1	U		0.23	0.20	ΰ	GAM
Europium 152	14683-23-9	ט		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	ซ	GAM
Europium 155	14391-16-3	ט		0.14	0.10	U	GAM
Thorium 228	14274-82-9	ט		0.090		U	GAM
Thorium 232	TH-232	U		0.23		U	GAM
Uranium 235	15117-96-1	Ŭ		0.24		ับ	GAM
Uranium 238	U-238	U		5.7		ซ	GAM
Americium 241	14596-10-2	U		0.26		ប	GAM
Silver 108m	14391-65-2	U		0.053		ប	GAM

100F RemainSitesBurialGrnd-SoilFullP

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SUMMARY DATA SECTION
Page 8

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 03/14/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0228

R602124-07

LAB CONTROL SAMPLE

Lab Control Sample

SDG 7390 Contact Melissa C. Mannion	Client/Case no <u>Hanford</u> <u>SDG K0228</u> Contract <u>No. 630</u>
Lab sample id R602124-07	* Client sample id Lab Control Sample
Dept sample id <u>7390-007</u>	Material/Matrix SOLID
·	SAF No RC-032

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC	3σ LMTS (TOTAL)	PROTOCOI LIMITS
Nickel 63	222	7.1	3.7	30		NI_L	224	9.0	99	83-117	80-120
Total Strontium	9.46	0.56	0.26	1.0		SR	9.84	0.39	96	82-118	80-120
Plutonium 238	23.5	2.5	0.33	1.0		PU	23.8	0.95	99	82-118	80-120
Plutonium 239/240	27.9	2.9	0.23	1.0		PU	26.4	1.1	106	81-119	80-120
Cobalt 60	3.01	0.30	0.12	0.050		GAM	2.76	0.11	109	70-130	80-120
Cesium 137	2.87	0.24	0.17	0.10		GAM	2.80	0.11	102	73-127	80-120

100F RemainSitesBurialGrnd-SoilFullP

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	QC-LCS #56203	·

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/14/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0228

R602124-09

DUPLICATE

J118J1

	7390 Melissa C. Mannion				Client/Case no Contract	
	DUPLICATE			ORIGINAL		
Lab sample id	R602124-09	Lab sampl	e id	R602124-06	Client sample id	J118J1
Dept sample id	7390-009	Dept sampl	e id	7390-006	Location/Matrix	116-F-16 Shallow SOLID
		Rece	ived	02/17/06	Collected/Weight	02/15/06 07:45 908 q
% solids	100.0	ŧ so		100.0	Custody/SAF No	RC-032-022 RC-032

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	Test	ORIGINAL pCi/g	20 ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD	3σ TOT	DER ø
Nickel 63	0.385	1.8	3.0	30	ם	NI_L	0.035	1.8	3.1	ט	-		0.3
Total Strontium	-0.014	0.12	0.25	1.0	ū	SR	-0.014	0.16	0.32	υ	-		0
Plutonium 238	0.037	0.15	0.36	1.0	ับ	PU	-0.027	0.055	0.21	υ	-		0.8
Plutonium 239/240	0.075	0.075	0.29	1.0	σ	PU	0.027	0.055	0.21	ט	-		1.0
Potassium 40	4.15	1.2	0.79			GAM	3.65	1.1	0.60		13	70	0.5
Cobalt 60	U		0.092	0.050	ט	GAM	σ		0.084	ט	-		0.1
Cesium 137	ט		0.070	0.10	σ	GAM	ช		0.075	บ	-		0.1
Radium 226	υ		0.16	0.10	U	MAD	U		0.37	U	-		1.0
Radium 228	ָּט		0.38	0.20	ប	GAM	ט		0.40	ט	-		0.1
Europium 152	υ		0.20	0.10	.Ψ	GAM	υ		0.18	υ	-		0.1
Europium 154	υ		0.25	0.10	Ü -	GAM	U		0.24	υ	-		0.1
Europium 155	U		0.16	0.10	ט	GAM	Ü		0.18	υ	-		0.2
Thorium 228	U		0.20		σ	GAM	a		0.35	U	-		0.7
Thorium 232	U		0.38		υ	MAĐ	ט		0.40	U	-		0.1
Uranium 235	υ		0.25		υ	GAM	σ		0.29	ΰ	-		0.2
Uranium 238	υ		9.2		U	GAM	U		12	U	-		0.4
Americium 241	ប		0.19		σ	GAM	U		0.19	U	_		0
Silver 108m	U		0.055		Ū	GAM	U		0.053	ט	_		0.1

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DUPLICATES

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